
Measurement Needs aka ... MNs

Goals for the Afternoon and Tomorrow



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What are MNs?

- Measurement Needs (MNs) form the core of the workshop recommendations.
- They reflect an important measurement problem that poses a technical barrier to an economically significant technological innovation.
- A MN can be one that appears at any stage of the overall innovation cycle, ie.
 - creation of a new product or process technology,
 - through its production and marketing,
 - and including its effective use.
- Lastly, MNs are “authenticated” by stakeholders outside NIST.



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Key Things to Consider

- What are the ***Technical Barriers to the Innovation?***
- At what ***Stage of the Innovation*** does the barrier appear?
- What is the ***Measurement Problem*** that is part of technical barrier?
- What ***Potential Solutions*** to the problem are needed?
- Economic Significance



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Today's Discussions

- Three groups
 - Materials
 - Devices and Circuits
 - Manufacturing
- Groups' Goal
 - A focused discussion among workshop participants of **significant technical barriers**, with attention to those for which a **measurement problem** exists.
- By Day's End
 - Collection of issues, barriers and problems for Tuesday's Breakout Sessions



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Tuesday's Breakouts

- 3 Concurrent Sessions
 - Materials
 - Circuits and Devices
 - Manufacturing
- Goal for each group
 - Prioritize and recommend most pressing MNs within topic
- Special attention to **What, Who, Why:**
 - **What:** Technical Barrier?, Measurement Problem?, Potential Solution(s)?
 - **Who:** Potential Providers?, Role of Government?
 - **Why:** Economic Significance?, Why Government?



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Economic Scope of the Innovation

- Infrastructure
 - New materials, substrates and equipment
 - Realignment of existing capabilities
- Circuits:
 - Displays, signage, advertising
 - Disposable sensors and environment monitors
 - RFID and tagging
- Applications:
 - Healthcare, pharmaceuticals, medicine
 - Homeland security, defense
 - Energy, lighting
 - Shipping, transportation, tracking
 - Media, entertainment, telecommunications



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Public Views of Economic Significance

- Organic / Flexible Electronics (IDTech, 2005; Research and Markets, 2005)
 - 2015 \$30 billion Logic, Memory, Displays, Lighting
 - 2025 \$250 billion
 - Organic electronics \$96 billion
 - Logic/memory \$30 billion
 - Displays/electronics products \$20 billion
 - Power \$15.2 billion
 - Lighting \$15 billion
 - Billboards, posters, signs (active, passive, dedicated) \$10 billion
 - Sensors & components \$5.6 billion
 - RF and anti-static coatings \$0.2 billion
 - Other
- Displays & Signage
 - Mobile displays: \$250 billion by 2025 (Polymer Vision, 2005)
 - Point of Purchase (POP) Signage: \$42 billion worldwide in 2005 (IT Strategies, 2005)



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RFID: Item Level Tagging

- *“By 2015, it is expected that 1 trillion RFID tags will be sold annually of which 80% will be item level tags with the majority being labels.”*

Smart Label Summit, June 2006

- RFID Tagging = Exponential growth

- By 2015, the value of RFID tag sales will have increased 11x over 2005
- Total market value, including systems and services, increase from \$2.32 billion in 2005 to \$26.9 billion in 2015

RFID Forecasts, Players and Opportunities 2005-2015, IDTechEx

- Sectors: Retail, Consumer Goods Land and Sea Logistics, Postal
 Airlines and Airports Healthcare
 Animals and Farming Books, Libraries, Archiving
 Manufacturing Leisure, Sports
 Laundry Financial, Security, Safety
 Military Passenger Transport, Automotive



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Do's and Don'ts

Do's

- Think showstoppers and measurement problems
- Think measurements for standards
- Look 3 yrs. or beyond
- Keep discussions targeted
- Allow full participation

Don'ts

- Focus on solutions, standards or specifications
- Concentrate on product-specific problems



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